REMARKS

Claims 1-8 remain in this application for present examination.

Claim Rejections Under 35 U.S.C. §112, second paragraph

Applicants have amended claim 1 to obviate the rejection under section 112, second paragraph noted in paragraph 7 of the Final rejection, which was also maintained in the Advisory Action. As amended, claim 1 no longer recites "to prevent full diffusion of said intermediate layer into said overlay". Accordingly, it is believed the rejection should be withdrawn.

Claim Rejections Under 35 U.S.C. §103(a):

Applicants traverse the rejection of claims 1-8 as being obvious over Huhn (U.S. 2001/0016267, referred to hereafter as Huhn). Claim 1 recites a composite multilayer material having a backing layer, a bearing metal layer, an intermediate layer and an overlay. The overlay has about 0 - 20 wt.% of at least one of copper or silver, the rest being tin. The intermediate layer is a single layer of nickel having a thickness greater than 4 μm as applied to the bearing metal layer, with the intermediate layer being in direct contact with the bearing metal layer and the overlay for diffusion of a portion of the single layer of nickel directly into the overlay to form an initially absent tin-nickel layer between a portion of the single layer of nickel and the overlay.

As such, Applicants have claimed a multilayer bearing material having a specified number of discrete layers as applied, three, thereby having a single intermediate layer. Further, each layer has a specified chemical composition and thickness, with the overlay consisting of at least one of copper or silver, the rest being tin and the intermediate layer being pure nickel, and having a thickness greater than 4 μm as applied. In contrast Huhn prescribes a multilayer bearing material having four layers as applied, including first and second intermediate layers, discussed in more detail below. Applicants acknowledge the mention of prior art bearing materials having three layers in paragraphs [0008] and [0009] in Huhn, however, these three layered constructions are mentioned with the purpose of distinguishing the inventive four layered material thereover. In particular, paragraph [0008] describes a common alloy consisting of a bearing metal, an intermediate layer of

nickel and an overlay of PbSn10Cu2. The nickel, as is well know by those having ordinary skill in the art, provides a diffusion barrier between the overlay and the bearing metal. Then, paragraph [0009] provides further discussion regarding the well known characteristics exhibited by the three layered bearing materials discussed in the preceding paragraph [0008], such that they exhibit low hardness and are insensitive to scuffing, and further, have limited load carrying capacities, which makes them no longer suitable for the loads imposed by new engines. Applicants further note that prior art constructions having a single intermediate nickel layer, prior to applicants discovery, as discussed in applicants' application on page 4, line 31 - page 5, line 10, use relatively thin nickel layers, i.e. 1-3 µm. This is due in large part because nickel layers, prior to applicants discovery, do not possess good sliding characteristics, as such, they are intended to wear quickly to allow the underlying bearing metal layer to be exposed to provide a backup bearing surface. Accordingly, use of a relatively thick single nickel intermediate layer, particularly one greater than 4 µm, based on the prior art is counterintuitive. And so, in order to remedy the inadequacies of the three layer prior art bearing materials, Huhn sets forth by teaching away from use of a three layer bearing material by prescribing a specific four layer bearing material.

In particular, Huhn discloses use of a bearing metal layer 1 applied to a steel backing layer, with a first intermediate layer 2 of nickel applied to the bearing metal layer; a second intermediate layer 3 of nickel-tin applied to the first intermediate layer 2, and an overlay 4 of a tin matrix 5 applied to the second intermediate layer 3. Accordingly, not only doesn't Huhn teach use of a single intermediate layer of pure nickel, but the pure nickel layer 2 disclosed in Huhn is not in direct contact with the overlay 4, as claimed by Applicants, but rather is necessarily spaced from the overlay 4 by the instrumental second intermediate layer 3 of nickel-tin. The second intermediate layer 3 of nickel-tin is necessary to provide the bearing material with its increased service life. Tin from the overlay is diffused inwardly into the second intermediate layer 3 and nickel is diffused outwardly from the first intermediate layer 2 into the second intermediate layer 3 (paragraph [0048]). The first intermediate layer 2 of nickel, preferably from 1 to 4µm (paragraph [0030]), maintains the desired ratio of nickel in the second intermediate layer by diffusion of some of the nickel from the first intermediate layer 2 into the second intermediate layer 3. Meanwhile, the overlay 4 maintains the

desired ratio of tin in the second intermediate layer by diffusion of tin from the overlay 4 into the second intermediate layer 2. This critical feature of Huhn would not be possible with a nickel layer alone. Accordingly, the thickness of the first intermediate nickel layer 2 provides a specific function of contributing to the equilibrium-determined growth of the second intermediate tin-nickel layer 3. As such, the desired 1:1 ratio of tin to nickel in the second intermediate tin-nickel layer is maintained (paragraph [0030]).

The notion posited by the examiner that one of ordinary skill in art would eliminate the second intermediate layer 3 of nickel-tin for economic reasons, thereby leaving the first intermediate layer 2 of nickel between 1-4 µm between the overlay and the underlying bearing material is without basis. Not only is there no suggestion for making this proposed modification, but to do so would completely destroy the teachings of Huhn by eliminating the very layer that provides the multilayer bearing material with its enhanced performance characteristics. Further, if one were to eliminate the second intermediate layer 3 for economic reasons, they would not maintain the 1-4 µm nickel layer between the bearing material and the tin-based overlay, but would fall back to the bearing material prescribed in paragraph [0008] of Huhn, thereby ending up with the well known, relative thin diffusion barrier layer of nickel between an overlay of PbSn10Cu2 and an underlying bearing material. This is not what is claimed by Applicants. Aside from applicants' inventive multilayer bearing material not having the well know thin nickel layer, which is well known to typically range from between 1 to 3 µm, applicants' overlay consists of about 0 - 20 wt.% of at least one of copper or silver, the rest being tin. As such, applicants believe the examiner has improperly used piecemeal reconstruction to arrive at applicants' claimed multilayer bearing material by selecting one aspect of the inventive teachings of Huhn, namely the first intermediate layer 2 of nickel ranging between 1 to 4 µm, while disregarding the remaining necessary teachings, namely the second intermediate layer 3 of tin-nickel. If the examiner is going to rely on the Huhn reference to maintain the rejection, it is respectfully contended that the examiner must consider the reference in its entirety, for all of its teachings, and not destroy its teachings by selectively grasping some features and disregarding others.

Accordingly, claim 1 is believed to define patentable subject matter and to be in proper form for allowance. Such action is respectfully requested.

Claims 2-5, 7 and 8 are ultimately dependant upon amended claim 1, and thus, are believed to define patentable subject matter for at least the same reasons and to be in proper form for allowance. Such action is respectfully requested.

Claim 6 has been rewritten in independent form, including all the limitations of base claim 1, wherein the intermediate layer is about 6 µm - 8 µm as applied to the bearing metal layer. As discussed above with regard to independent claim 1, there is no support for arriving at the inventive multilayer bearing material including an intermediate layer greater than 4 µm in view of Huhn, let alone one having an intermediate layer of about 6 µm - 8 µm. Accordingly, claim 6 is believed to define patentable subject matter and to be in proper form for allowance. Such action is respectfully requested.

An extension fee covering the difference between the already paid in 2 month extension and a 3 month extension is being paid in, with amount being paid in herewith being $620.

It is believed that this application now is in condition for allowance. Further and favorable action is requested.

The Patent Office is authorized to charge or refund any fee deficiency or excess to Deposit Account No. 04-1061.

Respectfully submitted,

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Date

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